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RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/423,035B

DATE: 01/31/2003
TIME: 15:59:40

Input Set : A:\463.4.TXT
Output Set: N:\CRF4\01312003\I423035B.raw

```
   4 <110> APPLICANT: Joyce, Gerald F.
   5         Breaker, Ronald R.
   7 <120> TITLE OF INVENTION: ENZYMATIC DNA MOLECULES
  10 <130> FILE REFERENCE: TSRI 463_4
  12 <140> CURRENT APPLICATION NUMBER: US 09/423,035B
  13 <141> CURRENT FILING DATE: 2000-01-13
  15 <150> PRIOR APPLICATION NUMBER: PCT/US98/08677
  16 <151> PRIOR FILING DATE: 1998-04-29
  18 <150> PRIOR APPLICATION NUMBER: US 60/045,228
  19 <151> PRIOR FILING DATE: 1997-04-29
  21 <160> NUMBER OF SEQ ID NOS: 150
  23 <170> SOFTWARE: FastSEQ for Windows Version 4.0
  25 <210> SEQ ID NO: 1
  26 <211> LENGTH: 15
  27 <212> TYPE: DNA
  28 <213> ORGANISM: Artificial Sequence
  30 <220> FEATURE:
  31 <223> OTHER INFORMATION: Synthesized
  33 <400> SEQUENCE: 1
  34 cggtaagctt ggcac                                          15
  36 <210> SEQ ID NO: 2
  37 <211> LENGTH: 19
  38 <212> TYPE: DNA
  39 <213> ORGANISM: Artificial Sequence
  41 <220> FEATURE:
  42 <223> OTHER INFORMATION: Synthesized
W--> 44 <221> NAME/KEY: misc_feature
  45 <222> LOCATION: 8
  46 <223> OTHER INFORMATION: N = Adenosine Ribonucleotide
W--> 48 <400> 2
W--> 49 tcactatngg aagagatgg                                     19
  51 <210> SEQ ID NO: 3
  52 <211> LENGTH: 38
  53 <212> TYPE: DNA
  54 <213> ORGANISM: Artificial Sequence
  56 <220> FEATURE:
  57 <223> OTHER INFORMATION: Synthesized
  59 <400> SEQUENCE: 3
  60 acacatctct gaagtagcgc cgccgtatag tgacgcta                  38
  62 <210> SEQ ID NO: 4
  63 <211> LENGTH: 80
  64 <212> TYPE: DNA
  65 <213> ORGANISM: Artificial Sequence
```

RAW SEQUENCE LISTING   DATE: 01/31/2003
PATENT APPLICATION: .US/09/423,035B   TIME: 15:59:40

Input Set : **A:\463.4.TXT**
Output Set: **N:\CRF4\01312003\I423035B.raw**

```
       67 <220> FEATURE:
       68 <223> OTHER INFORMATION: Synthesized
W--> 70 <221> NAME/KEY: misc_feature
       71 <222> LOCATION: (16)...(65)
       72 <223> OTHER INFORMATION: n = a, g, t, or c
W--> 74 <400> 4
W--> 75 gtgccaagct taccgnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 60
W--> 76 nnnnngtcgc catctcttcc                                          80
       78 <210> SEQ ID NO: 5
       79 <211> LENGTH: 28
       80 <212> TYPE: DNA
       81 <213> ORGANISM: Artificial Sequence
       83 <220> FEATURE:
       84 <223> OTHER INFORMATION: Synthesized
W--> 86 <221> NAME/KEY: misc_feature
       87 <222> LOCATION: 28
       88 <223> OTHER INFORMATION: N = Adenosine Ribonucleotide
W--> 90 <221> misc_feature
       91 <222> LOCATION: 28
       92 <223> OTHER INFORMATION: 2' 3' cyclic phosphate
W--> 94 <400> 5
W--> 95 gggacgaatt ctaatacgac tcactatn                               28
       97 <210> SEQ ID NO: 6
       98 <211> LENGTH: 28
       99 <212> TYPE: DNA
      100 <213> ORGANISM: Artificial Sequence
      102 <220> FEATURE:
      103 <223> OTHER INFORMATION: Synthesized
W--> 105 <221> NAME/KEY: misc_feature
      106 <222> LOCATION: 28
      107 <223> OTHER INFORMATION: N = Adenosine Ribonucleotide
W--> 109 <221> misc_feature
      110 <222> LOCATION: 1
      111 <223> OTHER INFORMATION: Optional 5 prime biotinylation
W--> 113 <400> 6
W--> 114 gggacgaatt ctaatacgac tcactatn                              28
      116 <210> SEQ ID NO: 7
      117 <211> LENGTH: 19
      118 <212> TYPE: DNA
      119 <213> ORGANISM: Artificial Sequence
      121 <220> FEATURE:
      122 <223> OTHER INFORMATION: Synthesized
W--> 124 <221> NAME/KEY: misc_feature
      125 <222> LOCATION: 8
      126 <223> OTHER INFORMATION: N = Adenosine Ribonucleotide
W--> 128 <400> 7
W--> 129 tcactatngg aagagatgg                                        19
      131 <210> SEQ ID NO: 8
      132 <211> LENGTH: 8
```

RAW SEQUENCE LISTING   DATE: 01/31/2003
PATENT APPLICATION: **US/09/423,035B**   TIME: 15:59:40

Input Set : **A:\463.4.TXT**
Output Set: **N:\CRF4\01312003\I423035B.raw**

```
       133 <212> TYPE: DNA
       134 <213> ORGANISM: Artificial Sequence
       136 <220> FEATURE:
       137 <223> OTHER INFORMATION: Synthesized ·
W--> 139 <221> NAME/KEY: misc_feature              /
       140 <222> LOCATION: 8
       141 <223> OTHER INFORMATION: N = Adenosine Ribonucleotide
W--> 143 <400> 8
W--> 144 tcactatn                                              8
       146 <210> SEQ ID NO: 9
       147 <211> LENGTH: 30
       148 <212> TYPE: DNA
       149 <213> ORGANISM: Artificial Sequence
       151 <220> FEATURE:
       152 <223> OTHER INFORMATION: Synthesized
       154 <400> SEQUENCE: 9
       155 ccatctcttc ctatagtgag tccggctgca                    30
       157 <210> SEQ ID NO: 10
       158 <211> LENGTH: 15
       159 <212> TYPE: DNA
       160 <213> ORGANISM: Artificial Sequence
       162 <220> FEATURE:
       163 <223> OTHER INFORMATION: Synthesized
       165 <400> SEQUENCE: 10
       166 gtgccaagct taccg                                    15
       168 <210> SEQ ID NO: 11
       169 <211> LENGTH: 43
       170 <212> TYPE: DNA
       171 <213> ORGANISM: Artificial Sequence
       173 <220> FEATURE:
       174 <223> OTHER INFORMATION: Synthesized
       176 <400> SEQUENCE: 11
       177 ctgcagaatt ctaatacgac tcactatagg aagagatggc gac        43
       179 <210> SEQ ID NO: 12
       180 <211> LENGTH: 19
       181 <212> TYPE: DNA
       182 <213> ORGANISM: Artificial Sequence
       184 <220> FEATURE:
       185 <223> OTHER INFORMATION: Synthesized
W--> 187 <221> NAME/KEY: misc_feature
       188 <222> LOCATION: 8
       189 <223> OTHER INFORMATION: N = Adenosine Ribonucleotide
W--> 191 <400> 12
W--> 192 tcactatngg aagagatgg                                  19
       194 <210> SEQ ID NO: 13
       195 <211> LENGTH: 43
       196 <212> TYPE: DNA
       197 <213> ORGANISM: Artificial Sequence
       199 <220> FEATURE:
```

RAW SEQUENCE LISTING
PATENT APPLICATION: **US/09/423,035B**

Input Set : **A:\463.4.TXT**
Output Set: **N:\CRF4\01312003\I423035B.raw**

```
        200 <223> OTHER INFORMATION: Synthesized
W-->    202 <221> NAME/KEY: misc_feature
        203 <222> LOCATION: 28
        204 <223> OTHER INFORMATION: N = Adenosine Ribonucleotide
W-->    206 <400> 13
W-->    207 gggacgaatt ctaatacgac tcactatngg aagagatggc gac              43
        209 <210> SEQ ID NO: 14
        210 <211> LENGTH: 50
        211 <212> TYPE: DNA
        212 <213> ORGANISM: Artificial Sequence
        214 <220> FEATURE:
        215 <223> OTHER INFORMATION: Synthesized
        217 <400> SEQUENCE: 14
        218 tcacacatct ctgaagtagc gccgccgtat gtgacgctag gggttcgcct          50
        220 <210> SEQ ID NO: 15
        221 <211> LENGTH: 50
        222 <212> TYPE: DNA
        223 <213> ORGANISM: Artificial Sequence
        225 <220> FEATURE:
        226 <223> OTHER INFORMATION: Synthesized
        228 <400> SEQUENCE: 15
        229 gggggggaacg ccgtaacaag ctctgaacta gcggttgcga tatagtcgta         50
        231 <210> SEQ ID NO: 16
        232 <211> LENGTH: 50
        233 <212> TYPE: DNA
        234 <213> ORGANISM: Artificial Sequence
        236 <220> FEATURE:
        237 <223> OTHER INFORMATION: Synthesized
        239 <400> SEQUENCE: 16
        240 cgggactccg tagcccattg ctttttgcag cgtcaacgaa tagcgtatta          50
        242 <210> SEQ ID NO: 17
        243 <211> LENGTH: 50
        244 <212> TYPE: DNA
        245 <213> ORGANISM: Artificial Sequence
        247 <220> FEATURE:
        248 <223> OTHER INFORMATION: Synthesized
        250 <400> SEQUENCE: 17
        251 ccaccatgtc ttctcgagcc gaaccgatag ttacgtcata cctcccgtat          50
        253 <210> SEQ ID NO: 18
        254 <211> LENGTH: 50
        255 <212> TYPE: DNA
        256 <213> ORGANISM: Artificial Sequence
        258 <220> FEATURE:
        259 <223> OTHER INFORMATION: Synthesized
        261 <400> SEQUENCE: 18
        262 gccagattgc tgctaccagc ggtacgaaat agtgaagtgt tcgtgactat          50
        264 <210> SEQ ID NO: 19
        265 <211> LENGTH: 50
        266 <212> TYPE: DNA
```

RAW SEQUENCE LISTING   DATE: 01/31/2003
PATENT APPLICATION: **US/09/423,035B**   TIME: 15:59:40

Input Set : **A:\463.4.TXT**
Output Set: **N:\CRF4\01312003\I423035B.raw**

```
267 <213> ORGANISM: Artificial Sequence
269 <220> FEATURE:
270 <223> OTHER INFORMATION: Synthesized
272 <400> SEQUENCE: 19
273 ataggccatg ctttggctag cggcaccgta tagtgtacct gcccttatcg          50
275 <210> SEQ ID NO: 20
276 <211> LENGTH: 50
277 <212> TYPE: DNA
278 <213> ORGANISM: Artificial Sequence
280 <220> FEATURE:
281 <223> OTHER INFORMATION: Synthesized
283 <400> SEQUENCE: 20
284 tctgctctcc tctattctag cagtgcagcg aaatatgtcg aatagtcggt          50
286 <210> SEQ ID NO: 21
287 <211> LENGTH: 50
288 <212> TYPE: DNA
289 <213> ORGANISM: Artificial Sequence
291 <220> FEATURE:
292 <223> OTHER INFORMATION: Synthesized
294 <400> SEQUENCE: 21
295 ttgcccagca tagtcggcag acgtggtgtt agcgacacga taggcccggt          50
297 <210> SEQ ID NO: 22
298 <211> LENGTH: 50
299 <212> TYPE: DNA
300 <213> ORGANISM: Artificial Sequence
302 <220> FEATURE:
303 <223> OTHER INFORMATION: Synthesized
305 <400> SEQUENCE: 22
306 ttgctagctc ggctgaactt ctgtagcgca accgaaatag tgaggcttga          50
308 <210> SEQ ID NO: 23
309 <211> LENGTH: 107
310 <212> TYPE: DNA
311 <213> ORGANISM: Artificial Sequence
313 <220> FEATURE:
314 <223> OTHER INFORMATION: Synthesized
```
W--> 316 **<221> NAME/KEY: misc_difference**
```
317 <222> LOCATION: 28
318 <223> OTHER INFORMATION: N = Adenosine Ribonucleotide
```
W--> 320 **<221> misc_feature**
```
321 <222> LOCATION: (49)...(88)
322 <223> OTHER INFORMATION: N = A, G, C, or T
```
W--> 324 **<400> 23**
W--> 325 **gggacgaatt ctaatacgac tcactatngg aagagatggc gacatctcnn nnnnnnnnnn 60**
W--> 326 **nnnnnnnnnn nnnnnnnnnn nnnnnnnngt gacggtaagc ttggcac   107**
```
328 <210> SEQ ID NO: 24
329 <211> LENGTH: 49
330 <212> TYPE: DNA
331 <213> ORGANISM: Artificial Sequence
333 <220> FEATURE:
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RAW SEQUENCE LISTING ERROR SUMMARY   DATE: 01/31/2003
PATENT APPLICATION: US/09/423,035B   TIME: 15:59:41

Input Set : A:\463.4.TXT
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Please Note:
Use of n and/or Xaa have been detected in the Sequence Listing. Please review the
Sequence Listing to ensure that a corresponding explanation is presented in the <220>
to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:2; N Pos. 8
Seq#:4; N Pos. 16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35
Seq#:4; N Pos. 36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55
Seq#:4; N Pos. 56,57,58,59,60,61,62,63,64,65
Seq#:5; N Pos. 28
Seq#:6; N Pos. 28
Seq#:7; N Pos. 8
Seq#:8; N Pos. 8
Seq#:12; N Pos. 8
Seq#:13; N Pos. 28
Seq#:23; N Pos. 28,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67
Seq#:23; N Pos. 68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87
Seq#:23; N Pos. 98
Seq#:50; N Pos. 34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53
Seq#:50; N Pos. 54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73
Seq#:50; N Pos. 74,75,76,77,78,79,80,81,82,83
Seq#:51; N Pos. 35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54
Seq#:51; N Pos. 55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,74
Seq#:51; N Pos. 75,76,77,78,79,80,81,82,83,84
Seq#:123; N Pos. 18
Seq#:128; N Pos. 22
Seq#:133; N Pos. 8,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47
Seq#:133; N Pos. 48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66
Seq#:133; N Pos. 67,68
Seq#:139; N Pos. 28
Seq#:140; N Pos. 5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25
Seq#:140; N Pos. 26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44
Seq#:141; N Pos. 28
Seq#:143; N Pos. 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22
Seq#:143; N Pos. 23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40
Seq#:146; N Pos. 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22
Seq#:146; N Pos. 23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41
Seq#:146; N Pos. 42,43,44,45,46,47,48,49,50